

propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof; wherein said film further comprises a second transition layer exterior to said core layer and on a side of said core layer opposite to said first transition layer and first skin layer, said second transition layer comprising a material selected from the group consisting of polypropylene homopolymer, maleic anhydride grafted polypropylene, and blends thereof; and wherein said film further comprises a second skin layer exterior to said core layer and said second transition layer, and on a side of said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of amorphous polyamides, EVOH copolymers, high density polyethylenes, and blends thereof.

68. (New) The film of claim 67 having a seal strength of said first skin layer of at least about 240 grams per inch and having a coefficient of friction of at most about 0.4.

REMARKS

Claims 1-4, 7-21, 23-25, 31-45, and 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Peiffer et al. (U.S. Patent No.:6,086,982). Claims 5, 6, 22, 26, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peiffer et al. Claims 28, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peiffer et al. in view of Bader et al. (U.S. Patent No.:5,972,496). Claims 27 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peiffer et al. in view of Touhsaent (U.S. Patent No.:6,013,353).

In response to the Office Action, claims 1, 34, 38, 42 and 51 have been amended. New claims 52 to 68 have been added. Accordingly, claims 1 to 68 are pending. Additionally, an unexecuted 1.132 Declaration by Mr. Robert A. Migliorini accompanies this Amendment. An executed copy of the same will be filed shortly.

Reconsideration of the above rejections is respectfully requested.

Present Invention

The present invention relates to surface-treatable thermoplastic films, and methods to produce the same, which exhibit surprisingly good slip properties. Particularly, these films surprisingly combine the properties of good printability and good heat sealability with good slip properties. It has been discovered herein that this combination of properties is achieved by the incorporation of silicon additives into the transition layers, i.e. tie layers, of these films. (Tie layers are conventionally used for joining two chemically dissimilar resin layers.)

It is well recognized by one skilled in the art that when a sealable surface layer containing silicon additive is subjected to flame, corona, or plasma surface treatment, sealability is lost and the beneficial effect of silicon additive on lowering coefficient of friction is negated. This renders the film non-functional for packaging applications requiring the combination of good surface wettability, good sealability and low coefficient of friction. For this reason, silicon additive is typically incorporated into a sealable skin layer that will not be subjected to surface treatment such that sealability, and low coefficient of friction are obtained. However, surface wettability necessary for printability and other converting processes is not achieved due to the absence of a surface treatment step.

The surfaces of the films of the present invention can be treated since there is no silicon in, or on, the skin layers during the production and/or processing of these films. After processing, the silicon additives from the tie layer migrate through the skin layer to the surface of the skin layer. Accordingly, the coefficient of friction of the skin layer is reduced, thus providing good slip properties. The rate of migration of the silicon additives is significantly dependent upon the viscosity of the silicon. Silicon gum is an example of a viscous silicon which would exhibit a slow rate of migration. Additionally the sealability of the film is maintained by the absence of silicon additive on the sealable skin layer during surface treatment. Therefore a film containing silicon additive for improvement of slip properties is provided that will have good sealability and good surface wettability.

Claim Objections

As suggested by the Examiner, the spelling of "terephthalate" has been corrected in Claim 51. (Office Action, page 2, first paragraph.)

Rejections under 35 U.S.C. §102(e)

Claims 1-4, 7-21, 23-25, 31-45, and 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Peiffer et al. (Office Action, page 2, second paragraph, to page 3, second paragraph.)

Peiffer et al. disclose a thermoplastic film with a core layer, i.e. the base ply, which is made of a very specific type of polypropylene. The description of the polypropylene is on Col. 3, Lines 31-52, of Peiffer et al., and reproduced below. (Emphasis added.)

The base ply of the film ... **differs substantially in structure from the conventional isotactic propylene polymers** which are usually used in the base ply of boPP films. These structural differences can be achieved by the

preparation of the propylene polymers by means of novel metallocene catalysts.

A feature of this structural difference is a **mean isotactic block length of propylene polymer between two structural chain defects of at least 40**, preferably at least 60 and in particular at least 70 propylene units...

In addition...the polypropylene is distinguished by a **particularly low n-heptane-soluble fraction which is in general less than 1.0% by weight**, preferably >0 to 0.6% by weight and in particular is in the range from 0.5 to 0.005% by weight, based in each case on the weight of the starting polymer.

The n-heptane-insoluble fraction of the propylene polymer is in general highly isotactic. The chain isotactic index, determined by means of ^{13}C -NMR spectroscopy, of the n-heptane-insoluble fraction is at least 95%, preferably at least 96% and in particular at least 97 to 99%.

The molecular weight distribution is a further suitable parameter for characterizing the polymer structure. It is advantageously comparatively narrow. **The ratio of the weight average M_w to the number average M_n is preferably less than 4, especially less than 3.** It is in particular in the range from 1.5 to 2.7.

In summary, the core layer described by Peiffer et al. is made from unconventional polypropylene polymers. These polymers differ substantially in structure from conventional isotactic propylene polymers.

The structural differences include (1) a mean isotactic block length of propylene polymer between two structural chain defects of at least 40; (2) a particularly low n-heptane-soluble fraction which is in general less than 1.0% by weight; and (3) a narrow molecular weight distribution. These necessary structural characteristics are conferred by the polymerization of propylene polymers in the presence of metallocene catalysts.

Peiffer et al. state that conventional polypropylenes are polymerized with Ziegler-Natta catalysts, and polymerization in the presence of such catalysts is not

appropriate to polymerize their polypropylene. (See Col. 4, Lines 31-52.) Moreover, according to Mr. Migliorini, the n-heptane-soluble proportion of the polypropylene of less than 1% as disclosed in Peiffer, cannot be provided by using Ziegler-Natta catalyst systems due to lack of sufficient stereospecificity inherent to such catalyst systems..

By sharp contrast, as stated in the accompanying declaration, the polypropylenes used in the present invention are conventional polypropylenes. That is, the polypropylenes are polymerized in the presence of the conventional Ziegler-Natta catalysts.

Accordingly, independent claims 1, 34, 38 and 42 have been amended to recite a core layer comprising a "Ziegler-Natta catalyst-polymerized polypropylene, polyethylene, polybutene, copolymers thereof or blends thereof." Since Peiffer et al. do not disclose all the limitations recited in these claims, and their dependent claims, Peiffer et al. does not anticipate these claims, as amended. In fact, Peiffer et al. teach away from the use of Ziegler-Natta catalyst-polymerized polypropylene.

Support for this amendment is found throughout the specification, including the paragraph bridging pages 2 and 3; and page 3, lines 18-30. As specifically stated in the present specification, U.S. Patent Nos.: 4,502,263 (Crass et al.) and 4,734,317 (Bothe et al.) were each incorporated by reference in their entirety.

These patents describe the use of polypropylenes which are polymerized in the presence of Ziegler-Natta catalysts. In particular, Crass et al. describe the "polypropylene polymer forming the base layer" as "isotactic polypropylene, having an n-heptane-soluble constituent of 15% by weight or less..." (See Col. 2, Lines 53-55.) And, Bothe et al. describe the polypropylene polymer forming their base layer as

"[i]sotactic polypropylene, having an n-heptane-soluble proportion of about 15% by weight or less..." (See Col. 3, Lines 57-63.)

As stated in the accompanying declaration, the polypropylenes described by Crass et al. and Bothe et al. were polymerized using conventional Ziegler-Natta catalysts. In particular, Mr. Migliorini states that when the patents of Crass et al. and Bothe et al. were filed (December 16, 1983 and March 5, 1986, respectively), metallocene catalysts were not known, let alone used to polymerize propylene.

Independent claim 31 has not been amended. (Claim 31 is the only independent claim which has not been amended.) Claim 31 recites a method of making a film comprising the steps of coextruding a film of at least three layer which comprises a transition layer comprising a silicon additive, and a skin layer being substantially free of a silicon additive; cooling/quenching the film; and surface treating one or more exposed surfaces of the film with a corona, flame, or plasma treatment.

The Examiner states that claim 31 is rejected for the same reason "as set forth for claim 1 above, as the claimed subject matter is essentially the same." (Office Action page 5, second paragraph.)

Applicants respectfully disagree with the Examiner. The film produced by the method of claim 31 includes a characteristic not recited in claim 1, namely, surface treatment.

Peiffer et al. do not specifically disclose a film that both comprises silicon and is subject to treatment. It can be inferred that such characteristics of their films is not specifically disclosed because Peiffer et al. did not contemplate making such films.

Although Peiffer et al. may provide a "laundry list" of additives, and state that these additives may be in every layer, it does not follow that the myriad possible permutations were all considered, or described, by Peiffer et al.

As stated in the accompanying declaration, it is well recognized by one skilled in the art that when a film containing silicon additive is subjected to flame, corona, or plasma surface treatment, the beneficial effect of silicon additive on, for example, lowering coefficient of friction is negated. Accordingly, embodiments in which surface treatability of films were desired, additives which would confer good slip properties would not have been included. Correspondingly, embodiments in which good slip properties of films were desired (which would include silicon additives), would not have been surface treated. As stated in the accompanying declaration, a skilled artisan would have expected, at the time of the present invention, that such properties were not compatible.

Thus, Applicants respectfully assert that Peiffer et al. did not appreciate, contemplate, or specifically disclose the advantages of incorporating silicon in the tie layer of thermoplastic films to allow for surface treatability, and good slip properties.

New Claims

Claims 52-59 defining viscosity

New claims 52, 54, 56 and 58 correspond with original claims 1, 34, 38, and 42, respectively. However, these new claims each have the subject matter of claim 21 incorporated. That is, these claims further define the silicone additive in the transition layer as having "a viscosity greater than about 1,000,000 centistokes." New claims 53, 55, 57 and 59 correspond with claim 22. That is, these claims define the silicone additive in the transition layer as having "a viscosity from about 10,000,000 centistokes to about 50,000,000 centistokes." No new matter has been added.

The Examiner states that claims 21 and 22 are anticipated by Peiffer et al. In particular, the Examiner states that Peiffer et al. disclose silicone additive which has a "viscosity greater than about 1,000,000 centistokes, and greater than about 1,000 centistokes." The Examiner refers to Col. 5, Lines 36-39, of Peiffer et al. (See last paragraph of page 4 of the Office Action.)

It is respectfully asserted that the Examiner has misread Peiffer et al. The lines to which the Examiner refers disclose "a viscosity from 5,000 to 1,000,000m²/S" (i.e. 5,000 to 1,000,000 centistokes). Thus, a viscosity of over 1,000,000 centistokes is **not** disclosed.

Accordingly, the viscosity recited in the new claims 52-59 is outside the range disclosed by Peiffer et al. Thus, these claims are not anticipated by Peiffer et al.

Claims 60-68 defining seal strength and coefficient of friction

New claims 60, 62, 64 and 67 correspond with original claims 1, 34, 38, and 42, respectively. However, these new claims each have the subject matter of claim 29 incorporated. That is, these claims further define the film as having "a seal strength of said skin layer of at least about 200 grams per inch and [having] a coefficient of friction of at most about 0.65." Additionally, these claims further define the skin layer as being subjected to a treatment, i.e. corona discharge, plasma or flame treatment. Support for such treatments is found throughout the specification, including, for example, on page 7, lines 10-11. New claims 61, 63, 66 and 68 correspond with claim 30. That is, these claims define the film as having "a seal strength of said skin layer of at least about 240 grams per inch and having a coefficient of friction of at most about 0.4." These claims also further define the skin layer as being subjected to a treatment. No new matter has been added.

As discussed in the accompanying declaration, one of the novel features of the films of the present invention is the coexistence of a high seal strength, surface treatability, and a low coefficient of friction of a film containing a silicon additive.

The Examiner states that "Peiffer et al. do not specifically disclose a seal strength and coefficient of friction [recited in claims 29 and 30]....However, because the materials of Peiffer et al. are the same as that of the instant application, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have inherently achieved an at least similar seal strength and coefficient of friction with Peiffer et al. because at least similar materials would have yielded at least similar properties." (See paragraph bridging pages 8 and 9 of the Office Action.)

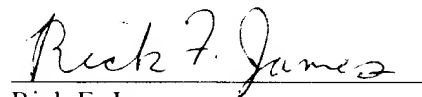
The Applicants agree with the Examiner that Peiffer et al. do not specifically disclose a seal strength and coefficient of friction as those recited in claims 29 and 30. It can be inferred that such characteristics of their films is not disclosed because Peiffer et al. did not contemplate making such films. Although Peiffer et al. may provide a "laundry list" of additives, and state that these additives may be in every layer, it does not follow that the myriad possible permutations were all considered, or described, by Peiffer et al. Clearly, embodiments in which sealability and surface treatability of films were desired, additives which would confer good slip properties would not have been included. Correspondingly, embodiments in which good slip properties of films were desired (which would include silicon additives), would not have been constructed for sealability and surface treatability. As stated in the accompanying declaration, a skilled artisan would have expected, at the time of the present invention, that such properties were not compatible. Thus, Applicants respectfully assert that Peiffer et al. did not appreciate the advantages of incorporating

Application No.: 09/879,448
Filing Date: June 12, 2001
Docket No.: 2001B056
Page 19

silicon in the tie layer of thermoplastic films to allow for sealability, surface treatability, and good slip properties.

In view of the amendment and remarks set forth above, it is respectfully submitted that the present application is in all respects in condition for allowance which action is earnestly requested. If for any reason the application, as amended, is not deemed in condition for allowance, the Examiner is respectfully requested to contact Applicants' attorney at the telephone number indicated below so that additional amendments may be entered as required. If any fees are due, please charge our Deposit Account 08-2461 for such sum.

Respectfully submitted,



Rick F. James
Registration No.: 48,772
Attorney for Applicant(s)

by
Susan A. Sipos
Registration No.: 43,128



ExxonMobil Chemical Company
Law Technology
P.O. Box 2149
Baytown, Texas 77522-2149
Tel: (281) 834-2438
Fax: (281) 834-2911
SAS:dlb

158258

VERSION OF AMENDMENT WITH MARKINGS
TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claims 1, 34, 38, 42 and 51 as follows;

1. (Amended) A thermoplastic film comprising:

- (a) a core layer comprising a Ziegler-Natta catalyst-polymerized polypropylene, polyethylene, polybutene, copolymers thereof or blends thereof ~~polyolefin~~ wherein the core layer comprises the interior of the film;
- (b) a first transition layer comprising a polyolefin and a silicone additive, wherein the first transition layer is exterior to the core layer; and
- (c) a first skin layer comprising a polyolefin wherein the first skin layer is exterior to the first transition layer and the core layer.

34. (Amended) A thermoplastic film comprising:

- (a) a core layer comprising Ziegler-Natta catalyst-polymerized- polypropylene homopolymer, wherein the core layer comprises the interior of the film;
- (b) a first tie layer exterior to and on one side of said core layer, said first tie layer comprising a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, polypropylene homopolymer, and blends thereof;
- (c) a first skin layer exterior to said core layer and said first tie layer, and on the same side of said core as said first tie layer, wherein said first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, and blends thereof; and

(d) a second skin layer exterior to said core layer and on a side of said core opposite to said first tie layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, linear low density polyethylenes, high density polyethylenes, medium density polyethylenes, polypropylene homopolymers, and blends thereof.

38. (Amended) A thermoplastic film comprising:

(a) a core layer comprising Ziegler-Natta catalyst-polymerized-polypropylene homopolymer, wherein the core layer comprises the interior of the film;

(b) a first tie layer exterior to and on one side of said core layer, said first tie layer comprising a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof;

(c) a first skin layer exterior to said core layer and said first tie layer on the same side of said core as said first tie layer, wherein said first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof;

(d) a second tie layer exterior to said core layer and on a side of said core layer opposite to said first tie layer and first skin layer, said second tie layer comprising a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; and

(e) a second skin layer exterior to said core layer and said second tie layer, and on a side of said core opposite to said first tie layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, and blends thereof.

42. (Amended) A thermoplastic film comprising:

(a) a core layer comprising Ziegler-Natta catalyst-polymerized-polypropylene homopolymer, wherein the core layer comprises the interior of the film;

(b) a first tie layer exterior to and on one side of said core layer, said first tie layer comprising a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof;

(c) a first skin layer exterior to said core layer and said first tie layer on the same side of said core as said first tie layer, wherein said first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof;

(d) a second tie layer exterior to said core layer and on a side of said core layer opposite to said first tie layer and first skin layer, said second tie layer comprising a material selected from the group consisting of polypropylene homopolymer, maleic anhydride grafted polypropylene, and blends thereof; and

(e) a second skin layer exterior to said core layer and said second tie layer, and on a side of said core opposite to said first tie layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of

amorphous polyamides, EVOH copolymers, high density polyethylenes, and blends thereof.

51. (Amended) The film of claim 42, wherein said core layer further comprises from about 2 wt% to about 10 wt% of polybutene ~~terephthalate~~ ~~teraphthalate~~, said polybutene ~~terephthalate~~ ~~teraphthalate~~ having a mean particle size in the range of from about 0.1 to about 10 μm .

Please add new claims 52-68

52. (New) A thermoplastic film comprising:

(a) a core layer comprising a polyolefin wherein the core layer comprises the interior of the film;

(b) a first transition layer comprising a polyolefin and a silicone additive, wherein the first transition layer is exterior to the core layer, and wherein the silicone additive has a viscosity greater than about 1,000,000 centistokes; and

(c) a first skin layer comprising a polyolefin wherein the first skin layer is exterior to the first transition layer and the core layer.

53. (New) The film of claim 52 wherein the silicone additive has a viscosity from about 10,000,000 centistokes to about 50,000,000 centistokes.

54. (New) The film of claim 52 wherein the polyolefin of the core layer comprises polypropylene homopolymer; wherein the polyolefin of the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material

selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, and blends thereof; and wherein the film further comprises a second skin layer exterior to said core layer and on a side of said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, linear low density polyethylenes, high density polyethylenes, medium density polyethylenes, polypropylene homopolymers, and blends thereof.

55. (New) The film of claim 54 wherein the silicone additive has a viscosity from about 10,000,000 centistokes to about 50,000,000 centistokes.

56. (New) The film of claim 52 wherein the a core layer comprises polypropylene homopolymer; wherein the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof; wherein said film further comprises a second transition layer exterior to said core layer and on a side of said core layer opposite to said first transition layer and first skin layer, said second transition layer comprises a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; and wherein said film further comprises a second skin layer exterior to said core layer and said second transition layer, and on a side of said core opposite to said

first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, and blends thereof.

57. (New) The film of claim 56 wherein the silicone additive has a viscosity from about 10,000,000 centistokes to about 50,000,000 centistokes.

58. (New) The film of claim 52 wherein the core layer comprises polypropylene homopolymer; wherein the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof; wherein said film further comprises a second transition layer exterior to said core layer and on a side of said core layer opposite to said first transition layer and first skin layer, said second transition layer comprising a material selected from the group consisting of polypropylene homopolymer, maleic anhydride grafted polypropylene, and blends thereof; and wherein said film further comprises a second skin layer exterior to said core layer and said second transition layer, and on a side of said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of amorphous polyamides, EVOH copolymers, high density polyethylenes, and blends thereof.

59. (New) The film of claim 58 wherein the silicone additive has a viscosity from about 10,000,000 centistokes to about 50,000,000 centistokes.

60. (New) A thermoplastic film comprising:

(a) a core layer comprising a polyolefin wherein the core layer comprises the interior of the film;

(b) a first transition layer comprising a polyolefin and a silicone additive, wherein the first transition layer is exterior to the core layer; and

(c) a first skin layer comprising a polyolefin wherein the first skin layer is exterior to the first transition layer and the core layer, and wherein the first skin layer has an exposed surface and wherein the exposed surface of the first skin layer is subjected to a treatment selected from the group consisting of corona discharge, plasma, and flame,

wherein the film has a seal strength of said first skin layer of at least about 200 grams per inch and has a coefficient of friction of at most about 0.65.

61. (New) The film of claim 60 having a seal strength of said first skin layer of at least about 240grams per inch and having a coefficient of friction of at most about 0.4.

62. (New) The film of claim 60 wherein the polyolefin of the core layer comprises polypropylene homopolymer; wherein the polyolefin of the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, linear low density polyethylenes, and blends thereof; and wherein the film further comprises a second skin layer exterior to said core layer and on a side of

said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, linear low density polyethylenes, high density polyethylenes, medium density polyethylenes, polypropylene homopolymers, and blends thereof.

63. (New) The film of claim 62 having a seal strength of said first skin layer of at least about 240 grams per inch and having a coefficient of friction of at most about 0.4.

64. (New) The film of claim 60 wherein the a core layer comprises polypropylene homopolymer; wherein the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof; wherein said film further comprises a second transition layer exterior to said core layer and on a side of said core layer opposite to said first transition layer and first skin layer, said second transition layer comprises a silicon additive and a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; and wherein said film further comprises a second skin layer exterior to said core layer and said second transition layer, and on a side of said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB)

terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene (PB) random copolymers, and blends thereof.

65. (New) The film of claim 64 wherein the second skin layer has an exposed surface and wherein the exposed surface of the second skin layer is subjected to a treatment selected from the group consisting of corona discharge, plasma, and flame.

66. (New) The film of claim 65 having a seal strength of both said first skin layer and said second skin layer of at least about 240 grams per inch and having a coefficient of friction of at most about 0.4.

67. (New) The film of claim 60 wherein the core layer comprises polypropylene homopolymer; wherein the first transition layer comprises a material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, polypropylene homopolymer, and blends thereof; wherein the first skin layer comprises material selected from the group consisting of ethylene-propylene-butylene (EPB) terpolymers, ethylene-propylene (EP) copolymers, propylene-butylene random copolymers, and blends thereof; wherein said film further comprises a second transition layer exterior to said core layer and on a side of said core layer opposite to said first transition layer and first skin layer, said second transition layer comprising a material selected from the group consisting of polypropylene homopolymer, maleic anhydride grafted polypropylene, and blends thereof; and wherein said film further comprises a second skin layer exterior to said core layer and said second transition layer, and on a side of said core opposite to said first transition layer and first skin layer, wherein said second skin layer comprises a material selected from the group consisting of amorphous polyamides, EVOH copolymers, high density polyethylenes, and blends thereof.

Application No.: 09/879,448

Filing Date: June 12, 2001

Docket No.: 2001B056

Page 29

68. (New) The film of claim 67 having a seal strength of said first skin layer of at least about 240 grams per inch and having a coefficient of friction of at most about 0.4.